

Amendments To The Claims:

This listing of claims replaces all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) An apparatus, comprising:
a carrier substrate having a visible surface and a heat generating component coupled to the carrier substrate; and
a thermochromatic material disposed adjacent to the carrier substrate, the thermochromatic material to produce a visual change of the visible surface when an activation temperature of the thermochromatic material is reached,
wherein the activation temperature of the thermochromatic material is above the normal operating temperatures of the heat generating component ~~to indicate an area of the carrier substrate that is above an operating temperature caused by a dissipation of heat from the heat generating component.~~
2. (Original) The apparatus of claim 1, wherein the carrier substrate comprises a printed circuit board.
3. (Original) The apparatus of claim 2, wherein a solder mask material is part of the visible surface.
4. (Original) The apparatus of claim 1, wherein the thermochromatic material comprises a leucodye to change from a first color to a transparent state.
5. (Original) The apparatus of claim 1, wherein the thermochromatic material comprises N-isopropylacrylamide to change from a first color to a transparent state.
6. (Original) The apparatus of claim 1, wherein the thermochromatic material comprises a liquid crystal to change from a first color to a second color.
7. (Original) The apparatus of claim 3, wherein the thermochromatic material comprises a layer above the solder mask.

8. (Previously Presented) The apparatus of claim 3, wherein the solder mask material comprises a first transparent layer, and wherein the thermochromatic material further comprises a second layer disposed below the first transparent layer.
9. (Original) The apparatus of claim 1, wherein the carrier substrate further comprises component identification markings printed with the thermochromatic material.
10. (Currently Amended) A printed circuit board, comprising:
a signal layer coupled to a heat generating component;
a solder mask layer disposed above the signal layer; and
a thermochromatic layer disposed adjacent to the solder mask layer, wherein the thermochromatic layer comprises an activation temperature to change a visible surface of the printed circuit board from a first visible state to a second visible state, wherein the activation temperature of the thermochromatic layer to indicate an area of the printed circuit board that is above an the normal operating temperatures of the printed circuit board caused by a dissipation of heat from the heat generating component.
11. (Original) The printed circuit board of claim 10, wherein the first visible state comprises a first color and the second visible state comprises a second color.
12. (Original) The printed circuit board of claim 11, wherein the thermochromatic layer comprises a liquid crystal material.
13. (Original) The printed circuit board of claim 10, wherein the first visible state comprises a first color and the second visible state comprises a transparent state.
14. (Original) The printed circuit board of claim 13, wherein the thermochromatic layer comprises a leucodye material.
15. (Original) The printed circuit board of claim 13, wherein the thermochromatic layer comprises N-isopropylacrylamide.

16. (Original) The printed circuit board of claim 10, wherein the thermochromatic layer is disposed above the solder mask layer.

17. (Original) The printed circuit board of claim 10, wherein the solder mask layer is transparent, and wherein the thermochromatic layer is disposed below the solder mask layer.

18. (Original) The printed circuit board of claim 10, wherein the thermochromatic layer is integrated with the solder mask layer.

19. – 29. (Canceled)

30. (New) A detection apparatus, comprising:
a carrier substrate having a visible surface;
a heat generating component coupled to the carrier substrate; and
a thermochromatic material, adjacent the carrier substrate, for detecting heat from the component, which is in excess of normal operating conditions, wherein
the thermochromatic material has an activation temperature above the normal operating temperature of the component coupled to the carrier substrate, and wherein
the thermochromatic material provides a visual thermal differential of those areas on the carrier substrate having coupled components with temperatures above their normal operating temperatures.

31. (New) The detection apparatus of claim 30, wherein the carrier substrate is selected from the group consisting of: printed circuit boards (PCB), motherboards, daughterboards, controller boards, video adapters, and network interface cards.

32. (New) The detection apparatus of claim 30, wherein the heat generating component is selected from the group consisting of: processors, chipsets, graphic chips, voltage regulator components, and any combination thereof.

33. (New) The detection apparatus of claim 30, wherein the activation temperature is between about 30°F and about 200°F.

34. (New) The detection apparatus of claim 30, wherein the visual thermal differential is useful in providing diagnostic and identification procedures.

35. (New) The detection apparatus of claim 34, wherein the visual thermal differential is useful for identifying inefficient heat dissipation.

36. (New) The detection apparatus of claim 34, wherein the visual thermal differential is useful for identifying the elevated temperature of a defective component coupled to the carrier substrate.

37. (New) The detection apparatus of claim 30, wherein the thermochromatic material comprises a combination of color changing inks.

38. (New) The detection apparatus of claim 30, wherein a solder mask material is part of the visible surface.

39. (New) The detection apparatus of claim 38, wherein the solder mask material has similar properties to that of the thermochromatic material.

40. (New) The detection apparatus of claim 38, wherein the solder mask material and the thermochromatic material are mixed to form a single layer above a signal layer.